

National Aeronautics and
Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812



NOV 19 2001

Reply to Attn of: DA01

TO: Distribution

FROM: DA01/A. G. Stephenson

SUBJECT: Minutes of the MSFC Quality Council Meeting

The MSFC Quality Council (MQC) met on Tuesday, November 6, 2001. The meeting began at 9:00 a.m., in Building 4200, Conference Room P110. The roster of attendees for the meeting is attached as Enclosure 1. The presentation charts for the meeting are included as Enclosure 2.

OPENING REMARKS (A. ROTH/DE01):

The next audit of MSFC by National Quality Assurance, USA (NQA) will take place the week after Thanksgiving, on November 28-29. This audit will be to full scope and the ISO 9001:2000 revision. Several of today's agenda items will address the new requirements.

Art Stephenson held comments for the end of the meeting.

MQC ACTION ITEMS STATUS:

The presentation charts for the MQC Action Items Status are included as pages 5-11 and 15 of Enclosure 2.

MQC - 0042 - Organizations are to work together to make sure that they continue to support the audit program. If the organization has a person that has already been assigned to an audit and the auditor changes organizations, the responsible organizations should communicate with each other to ensure the auditor doesn't automatically drop from the audit.

There have been three cases where auditors have changed organizations prior to their scheduled audit dates. In all three cases, the auditors met their commitment. The recommendation was made to close this action and continue to work this issue as needed. The action was closed.

MQC-0043 – The Audit Manager is to provide feedback on support and communicate the performance of auditors to their respective directorate managers. Reports should communicate positive and negative issues concerning the auditor's support and capability.

Feedback is being provided to the Directorates. Several auditors have been removed from the list of active auditors based on this information. The recommendation was made to close this action and continue to work this issue as needed. The action was closed.

MQC-0047 – Implement the recommendations of the Product Conformity and Process Performance Metrics Team.

The Product Conformity and Process Performance Metrics Team provided three recommendations at the last MQC meeting. The Systems Management Office has addressed all three recommendations and proposed closure of this action.

Guidelines for project metrics are in place, and multiple project reporting mechanisms to senior management exist. Metrics from all the organizations are looking good. The approach should be the same, but the metrics will vary based on the individual projects. This action was closed.

Process Performance and Product Conformity (A. Roth/DE01):

As a result of action item MQC-0047, the data from the Monthly Executive Summaries submitted by ED, MP, FD, TD, and SD has been compiled for the fourth quarter of FY01. Most of the issues are beyond our decision control. We need to understand this, but there isn't a lot we can do.

The Executive Summaries for the fourth quarter of FY01 are included on page 13 of Enclosure 2. The stoplight colors need to be defined.

ACTION:

Define the stoplight colors used for the Executive Summaries and provide in the report at the next MQC meeting.

(Axel Roth, Due: Report at next MQC)

The status of the Marshall Directives was also provided as a measure of our processes. There are currently six active waivers against three of the 180 Directives that are in place today. The documented system appears to be adequate. The status is provided on page 14 of Enclosure 2.

MQC-0048 – Review CI [Continual Improvement] website and make changes to address how MSFC employees can create change and give employees a mechanism and the ability to initiate change through the continual improvement process.

Links to EDTec and the Marshall Institute have been added to the CI web site, and the link to IDEAS has been highlighted. A demo of the web site was provided. The "Employee Empowerment Statement" had been added to the web site, but has been removed pending approval. A copy of the statement is included as Enclosure 3.

This action remains open pending posting of the Employee Empowerment Statement on the CI web site.

INTERNAL QUALITY AUDIT REPORT (W. WOODS/QS40):

Warren Woods presented the status of the internal audit program. As of today, there are seven open nonconformance reports (NCRs) and none are late.

The categories of official non-conformances were discussed. Details for the top five categories of non-conformances are included in the charts. The most prevalent issues relate to records requirements.

The centerwide audit to ISO 9001:2000 that took place in October was discussed. There seems to be a lack of flow-down of objectives within the organizations, in spite of the communication mechanisms that exist. There was further discussion on this topic, and Axel Roth/DE01 was requested to provide additional information in the staff meeting later this week.

There is a general lack of awareness/understanding of continual improvement, although several good examples of continual improvement activities were identified across the center during the internal audit. There was further discussion on this topic. While we may be doing enough continual improvement to satisfy an ISO audit, Art Stephenson/DA01 does not agree that everyone is doing it the way he would like to see it done.

The presentation charts are included as pages 17-21 of Enclosure 2.

CORRECTIVE AND PREVENTIVE ACTION PROGRAM (J. THOMASON/HEI):

The corrective and preventive action programs are being employed by the center, with steady improvement in the timeliness of corrective actions.

The presentation charts are included as pages 23-24 of Enclosure 2.

CUSTOMER SATISFACTION & CONTINUAL IMPROVEMENT

(M. McLEAN/CD40):

The Organization Customer Feedback Coordinators and customer lists have been provided by all organizations. A demo of the Customer Satisfaction web site was provided.

The presenter requested assistance in getting at least one metric for customer satisfaction from each of the Directorates/Offices for inclusion in the MSFC Implementation Plan for

FY02. After some discussion, it was decided that it is appropriate to include metrics related to both internal and external customers in the plan.

A demo of the Balanced Score Card web site was provided. There was an extended discussion about improvement teams and their origins. B. Kilpatrick/ED01 stated that many of the teams working on continual improvement in his Directorate are informal teams led by selected individuals who solicit volunteers.

The presentation charts are included as pages 26-27 of Enclosure 2.

CONTINUAL IMPROVEMENT SUCCESS STORIES

PROJECT DOCUMENTATION SYSTEM (PDS) (G. McGRUFF/ED43):

G. McGriff/ED43 provided an overview of the Project Documentation System (PDS) and the resulting improvements and savings. The system has been shared with NASA Headquarters, as well as other NASA Centers, and is being used by some MSFC projects. Microgravity is using the system. The system is also being incorporated on the Space Launch Initiative (SLI) Program.

Team members responsible for development of the PDS system included: Gary McGriff/ED43, Brenda Lance/ED41, Brenda Bailey/ED41, Cindy Legowik/PWI, and Thurmon Allen/PWI.

There was a question as to what system the Flight Projects Office was using for the International Space Station (ISS). J. Steadman/FD10 was asked to check to see if the PDS system is in use or if it would be beneficial for ISS. G. McGriff stated that the code was developed here and the system can be provided free of charge to any project.

There was some discussion regarding patenting and licensing of the PDS system. At the time that PDS was developed, there weren't any similar tools commercially available, but now there are.

A question was asked about how the PDS fits into the work that is being done in ED43 by the Configuration and Data Management group. An integrated system for management of information from concept to repository is being evaluated. T. Vu/ED43 is already scheduled to provide a presentation to the Center Director on November 13 to discuss this issue.

The presentation charts are included as pages 29-32 of Enclosure 2.

COLLABORATIVE EFFORT WITH ORGANIZATIONS OUTSIDE OF MSFC – DEVELOPMENT OF AN ENVIRONMENTALLY-FRIENDLY EPOXY STRIPPING PROCESS (A. SHAPIRO/SD72):

A. Shapiro/SD72 presented a success story on Development of an Environmentally-Friendly Epoxy Stripping Process. This process was the result of a team effort between MSFC and contractor personnel.

Team members included: Alan Shapiro/SD72, Tommy Thompson/SD72, Dwight Goodman/SD73, Chet Speegle/RSSC, and Scott Marona/ASRI.

The presentation charts are included as pages 34-37 of Enclosure 2.

CONTINUAL LEARNING (S. DICKERSON/CD20):

S. Dickerson/CD20 provided a status of continual learning at MSFC from the perspective of the Employee and Organizational Development Department (EODD).

EODD is leading continual learning at the Center, utilizing partnerships, creativity and revolutionary learning systems to foster cutting edge performance. EODD sees themselves as the catalyst for exceeding traditional boundaries of learning and launching the potential of our people.

The Marshall Institute concept (rolled out a year ago) embodies the department's commitment to continual learning.

Marshall values, Agency/Center initiatives, programs and learning technologies form the foundation of the institute and permeate its six core areas (Engineering, Leadership, Project Management, Organizational Development, Professional Development and Science).

The shift from traditional training delivery to a dynamic learning environment is more customer-driven. This more enhanced level of services couldn't have happened at a better time than now, as the Center's ISO scope has increased to include continual improvement and the associated metrics.

EODD's objective for FY2002 is to increase employee and organizational development opportunities by equal to or greater than 10% of the FY2001 baseline.

The chart on page 39 of Enclosure 2 is a list of our many learning programs that are available. We have, or will, significantly improve products and services in all of these areas, both qualitatively and quantitatively.

Technology Assisted Learning

We are preparing to transition our online courseware provider from NetG to SmartForce. The move will increase the number of online programs available to center employees from 55 to more than 1500. Available courses include end user computer applications (such as Microsoft PowerPoint, Access and Project). Technical courses (Such as S.A.P., Java and C++) and soft skills training (such as conflict management, time management

and customer service. Testing is planned for December with a Center rollout early in the second quarter of FY02.

The Online Needs Assessment Tool is one we're quite proud of. All of our Center employees had an opportunity to input their training needs. That input was compiled and extrapolated into reports that Directorate managers can use to see the most asked for to the least asked for courses, pare down the list, prioritize and resubmit to us for inclusion in a training plan for the year. The system also allows for the courses to be printed into an Individual Development Plan for the employee.

In the Engineer Development area we have added to our staff three former Marshall employees (retirees) who are experts in their fields. They provide engineering training consultation and course development. They also teach in the NASA Engineering Training (NET) program and the Comprehensive System Skills Initiative (CSSI).

In FY01, 43 Headquarters training sessions were held, 13 of which were held at MSFC. Attendance was great. We are making maximum usage of Headquarters resources in Systems Engineering Training.

EODD accomplishments are as shown on page 40 of Enclosure 2.

A question was asked about getting assistance from EODD for focused training within organizations. Organizations should discuss training needs with their training representatives. The group was also reminded that a Form 59 must be completed for official training credit in employees' files.

We are suffering from lack of transfer of knowledge as people have left MSFC. Training can be obtained through external experts, but we can also train from within. Experienced people should be encouraged to train others, and they should be rewarded. Also, teachers learn by teaching.

STATUS OF NQA AUGUST 2001 SURVEILLANCE AUDIT FINDINGS (M. DEMURRAY/HEI):

M. DeMurray/HEI presented the status of the one minor finding from the surveillance audit conducted by National Quality Assurance, USA (NQA) this past August.

The presentation charts are included as pages 42-43 of Enclosure 2.

STATUS OF NQA ISO 9001:2000 PRE-ASSESSMENT AUDIT FINDINGS (M. DEMURRAY/HEI):

M. DeMurray/HEI presented the status of the four findings from the pre-assessment audit conducted by National Quality Assurance, USA (NQA) this past August. The finding related to depth of awareness of objectives is still being worked across the Center.

The presentation charts are included as pages 45-49 of Enclosure 2.

CLOSING REMARKS (A. ROTH/DE01):

The registration audit for full scope and ISO 9001:2000 is scheduled to take place on November 28-29. This audit will also change our surveillance schedule, so the next regular surveillance will be held in May 2002.

All MSFC activities are subject to audit; however, emphasis will be on those activities providing products/services to external customers. Everyone is encouraged to visit the ISO web page for information about the ISO 9001:2000 revision and the upcoming audit.

There are no other significant changes to the MMS besides the ISO 9001:2000 revision implementation. Organizations have made a great deal of progress in implementation of ISO 9001:2000 changes. Organizations still need to continue educating individuals on their role in supporting quality objectives.

Overall, the suitability, effectiveness, and adequacy of the Marshall Management System appear to be acceptable. No major problems have been identified by any means, including internal and external audits.

The presentation charts are included as pages 51-55 of Enclosure 2.

CLOSING REMARKS (A. STEPHENSON/DA01):

The paper on empowerment provided today, "Empowerment – Employee and Management Interaction as related to Continual Improvement", is very good. (Reference Enclosure 3.) Everyone should have a copy. We are embarking on a conscious effort to move the culture to another place – a continual learning culture based on our values. Continual improvement is just a component of a continual learning culture. It is the outcome of a culture with a continual learning mentality.

There is a pilot course in progress at Doublehead, working on a training process. This is a three-day event, followed by another three days after skipping a month, and then one month later, another three days. The next group to take the training will be the Center Director's staff.

A commitment to really want to do this is needed. Priority will be placed on taking the time to do this. Buy-in by "Change Agents" is needed.

Empowerment of employees happens in a continual learning environment. Senior management has to buy in to the concept. A continual learning culture will cause our values to come to life.

ACTION:

The Marshall Values, Quality Policy, and Safety Policy should all be posted in each of the Center's conference rooms. (The static cling posters should not be used for this.)

(S. Cloud/A. Roth/A. Goodson; Due: TBD)

Managers who get promoted in future will only be those that embrace the continual learning culture. People who don't buy in will be moved out of management into other roles. We will define the culture that we are asking people to embrace and sponsor. Consequences will be based on goals if you are inclined to be a manager or leader.

Marshall will be a more fun place. People will come to work knowing that they can make a difference. All employees will be involved in continual improvement – this shouldn't be a hard question.

We at the Center are committed to helping NASA get better. Individuals in organizations share to help the Center and Projects get better. We are looking for a culture that will encourage this. Managers have to pass on the word, be passionate, and must buy in.

Several portions of the paper on empowerment were also quoted during this part of the discussion.

No other items for record were discussed at the meeting. M. DeMurray/HEI kept the meeting minutes.



A. G. Stephenson
Chairman
MSFC Quality Council

Enclosures

- 1 Attendance Roster
- 2 MQC Presentation Charts
- 3 Paper on Empowerment – “Empowerment – Employee and Management Interaction as related to Continual Improvement”

Distribution:
Council Members
Meeting Attendees

ISO 9000 MSFC QUALITY COUNCIL MEETING

DATE: TUESDAY, November 6, 2001 LOCATION/ TIME: BLDG. 4200/P110, 9:00 a.m.

MEETING ATTENDANCE: [Please Check (X) Next to Your Name to Record Meeting Attendance.]

<u>NAME</u>	<u>ORGANIZATION</u>	<u>PHONE</u>	<u>FAX</u>
Director's Office			
<u>WS</u> Art Stephenson	DA01	544-1912	544-5228
James W. Bilbro	DA01	544-3467	544-8345
Bob L. Sackheim	DA01	544-1938	
<u>RK</u> Jim Kennedy	DD01	544-1914	544-5896
Axel Roth	DE01	544-0451	544-5590
Center Operations Directorate			
Sheila Cloud	AD01	544-0120	544-5893
<u>JM</u> Jim Carter	AD01	544-6630	544-7920
Linda Carpenter	AD02	544-8236	544-5867
Dan Adams	AD10	544-1614	544-8259
Lana Cucarola	AD30	544-0096	544-8752
Annette Tingle	AD30	544-4522	544-8752
Amanda Rasco	AD33	544-4511	544-8752
<u>DW</u> Deborah Wills	AD33	544-4525	544-8610
Lisa Adkins	AD40	544-7546	544-6570
Polly Edwards	AD50	544-4536	544-2101
Customer & Employee Relations Directorate			
Tereasa Washington	CD01	544-7491	544-6420
<u>SC</u> Susan Cloud	CD01	544-5377	544-2610
Pat Shultz	CD20	544-7559	544-4809
<u>CW</u> Caroline Wang	CD30	544-3887	544-6030
<i>Benjamin Anderson</i>	<i>CD30</i>	<i>4-6745</i>	<i>4-4809</i>
<i>Steve Duckman</i>	<i>CD40</i>	<i>4-0390</i>	<i>4-0007</i>
<i>Michael McLean</i>	<i>CD40</i>	<i>4-0397</i>	<i>4-0107</i>
Engineering Directorate			
<u>X</u> Bill Kilpatrick	ED01	544-1001	544-5896
Pat Layky	ED12	544-3481	544-3098
Terry Roberts	ED16	544-3717	544-0900
<u>X</u> Jim Lindsay	ED20	544-1301	544-0236
Craig Garrison	ED27	544-7197	544-8838
Dawn Cross-Stanley	ED35	544-1835	544-5877
Richard Lamb	ED37	544-1037	544-4307
Sonya Hutchinson	ED42	544-3312	544-5178
<u>AS</u> Herb Shivers	ED43	544-8903	544-9614
Karen Iftikhar	ED44	544-3653	
Flight Projects Directorate			
Jan Davis	FD01	544-0455	544-7580
<u>JS</u> Jackie Steadman	FD10	544-1940	544-5590
Jack Stokes	FD22	544-1764	544-5194
Steve Meacham	FD30	544-0241	544-4393
Michael Nelson	FD41	544-2059	544-9353
Chief Counsel			
<u>WH</u> Bill Hicks	LS01	544-0010	544-0258
<u>JF</u> Jim Frees	LS01	544-0123	544-5867
Abbie Johnson	LS01	544-0014	544-0258

Space Shuttle Projects Office

<u> </u> Alex McCool	MP01	544-0718	544-2432
<u> </u> Jodie Singer	MP01	544-0612	544-4155
<u> </u> Jeff Spencer	MP21	544-7498	544-7713
<u> </u> John Pea	MP71	544-8437	544-5799

Equal Opportunity Office

<u> </u> Charles Scales	OS01	544-4927	544-2411
<u> </u> Willie Love	OS01	544-0088	544-2411
<u> </u> Elia Ordonez	OS01	544-6658	544-2411
<u> </u> Billie Swinford	OS01	544-0087	544-2411

Procurement Office

<u> </u> Steve Beale	PS01	544-0257	544-3214
<u> </u> Byron Butler	PS01	544-0253	544-4400
<u> </u> Ray Woods	PS10	544-0384	544-3223
<u> </u> Jerry Williams	PS10	544-0295	544-4401
<u> </u> Jim Young	PS10	544-0362	544-3223

Safety and Mission Assurance

<u> </u> Amanda H. Goodson	QS01	544-2353	544-2053
<u> </u> Jim Ellis	QS01	544-0721	544-3893
<u> </u> Ron Mize	QS01	544-2485	544-8101
<u> </u> Terry Hamm	QS10	544-7402	544-3241
<u> </u> Mark Strickland	QS10	544-7432	544-4155
<u> </u> Don Miller	QS40	544-8361	544-4857
<u> </u> Kerry Warner	QS40	544-7350	544-8585
<u> </u> Warren Woods	QS40	544-2275	544-5685

Office of Financial Officer

<u> </u> Dave Bates	RS01	544-0052	544-0635
<u> </u> Sandy Coleman	RS01	544-0795	544-3536
<u> </u> Frank D. Mayhall	RS01	544-7266	544-4479
<u> </u> Peggy Williamson	RS24	544-3357	544-5863
<u> </u> Sharal Huegele	RS30	544-7286	544-9055

Science Directorate

<u> </u> Ann Whitaker	SD01	544-2481	544-5877
<u> </u> Tom Fleming	SD01	544-3962	544-5975
<u> </u> James Grisham	SD01	544-9607	544-8369
<u> </u> Lou Baccei	SD10	544-5506	
<u> </u> Robin Henderson	SD10	544-1738	544-8639
<u> </u> Lloyd Love	SD20	544-7702	544-2559
<u> </u> Wes Darbro	SD22	544-7742	544-2559
<u> </u> Roger Chassay	SD30	544-1969	544-5975
<u> </u> Clark Darty	SD40	544-2728	544-5892
<u> </u> Tom Dollman	SD40	544-6568	544-8500
<u> </u> Mike McCollough	SD50	544-4368	544-5800
<u> </u> Ed Reichmann	SD50	544-7603	544-5800
<u> </u> Tim Miller	SD60	922-5882	922-5823
<u> </u> Diane Samuelson	SD60	922-5832	922-5723
<u> </u> Joe Stroud	SD70	544-3529	544-2659
<u> </u> Roy Young	SD70	544-4965	544-2659
<u> </u> Tommy L. Thompson	SD72	544-3489	544-2659
<u> </u> Don Thurman	SD80	544-1908	544-9243

Space Transportation Directorate

<u>DJK</u> Dennis Kross	TD01	544-3551	544-4103
Chris E. Singer	TD01	544-7058	544-5876
<u>YW</u> James Wyckoff	TD03	544-7922	544-1821
<u>D</u> Ed Reske	TD64	544-1753	544-1215
<u>JSW</u> Gaines Watts	TD73	544-1455	

2nd Generation Reusable Launch Vehicle Program Office

Dennis Smith	UP01	544-9119	544-4103
Dan Dumbacher	UP01	544-0171	544-4051
<u>MC</u> Charles Chesser	UP01	544-0107	544-2053
Bruce Morris	UP01	544-2237	544-5095

Systems Management Office

<u>RM</u> Bob McKemie	VS10	544-2266	544-5178
<u>M</u> Neil Rainwater	VS10	544-8918	544-5178

Contractors

<u>MD</u> Mary DeMurray	HEI	544-1342	544-4470
Don Hartley	HEI	544-8981	544-4470
John McPherson	HEI	544-7479	544-9257
Randy Reed	HEI	544-6056	544-4470
<u>JS</u> Jim Thomason	HEI	544-3303	
Jeff Robinson	SCSC	544-4589	544-8990
<u>TW</u> Tom Wilson	HEI	544-7267	

VISITORS

NAME	ORGANIZATION	PHONE	FAX
<u>Roslin Hicks</u>	<u>DA01</u>	<u>4-7795</u>	<u>4-5228</u>
<u>Alan Shapiro</u>	<u>SD72</u>	<u>4-3488</u>	<u>4-2659</u>
<u>Angelia D. Walker</u>	<u>QS40</u>	<u>4-1064</u>	<u>4-9581</u>
<u>Jack Beasley</u>	<u>QS40</u>	<u>4-0630</u>	
<u>Chet Speegle</u>	<u>Raytheon</u>	<u>4-1777</u>	<u>4-7754</u>
<u>Brenda Bailey</u>	<u>ED41</u>	<u>4-1889</u>	<u>4-4131</u>
<u>Gary McGriff</u>	<u>ED43</u>	<u>4-9097</u>	
<u>Cindy Legowik</u>	<u>PWI/ED43</u>	<u>4-4340</u>	
<u>Thurmond Allen</u>	<u>PWI/ED43</u>		



George C. Marshall
Space Flight Center

Marshall Quality Council

November 6, 2001

Enclosure 2



Opening Remarks

Art Stephenson – Axel Roth



Agenda

- MQC Action Items Status (Warren Woods, Axel Roth, Michael McLean)
 - Process Performance and Product Conformity (reported with action item) *
- Internal Quality Audit Report (Warren Woods)
- Corrective and Preventive Action Program (Jim Thomason)
- Customer Satisfaction (Michael McLean) *
- Continual Improvement *
 - Continual Improvement Program (Michael McLean)
 - Continual Improvement Success Story (Gary McGriff)
 - Collaborative Efforts with Organizations Outside of MSFC (Alan Shapiro)
 - Continual Learning - (Sandra Dickerson) *
- NQA Surveillance & Pre-Assessment Status (Mary DeMurray)
- Closing Remarks (Axel Roth)
 - Changes That Could Affect the MMS *
 - Issues & Recommendations *
 - Assessment of the suitability, adequacy, and effectiveness of the MMS
- Other

* - New items to report to Sr. Management as a result of 9001:2000 revision

MQC Action Items Status



MQC Action Items Status

MQC-0042 - Warren Woods

MQC-0042 – *Organizations are to work together to make sure that they continue to support the audit program. If the organization has a person that has already been assigned to an audit and the auditor changes organizations, the responsible organizations should communicate with each other to ensure the auditor doesn't automatically drop from the audit.*

- With the number of people who are changing organizations now, we have had the opportunity to exercise this action several times. In every case the person originally signed up for the audit has been able to carry it out.
- Recommend closure of this action item



MQC-0043 – *The Audit Manager to provide feedback on support and communicate the performance of auditors to their respective directorate managers. Reports should communicate positive and negative issues concerning the auditor's support and capability.*

- Information supplied to direct reports. There have been several cases where organizations have agreed to remove auditors from the list of active auditors.
- Recommend closure of this action item

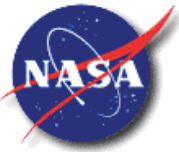
MQC-0047 – *Implement the recommendations of the Product Conformity and Process Performance Metrics Team*

- Recommendations presented to MQC on 8/14/01
 1. SMO should complete guidelines for project metrics
 2. Assign the action to collect and report product conformity and process performance metrics to an organization at selected management review meetings
 3. Determine where/how metrics will be reported to upper management (i.e., MQC)



Recommendation #1 - SMO should complete guidelines for project metrics

- MSFC processes satisfy the ISO requirement for project metrics through our MPG 7120.1/NPG 7120.5 which requires Programs/Project to Establish, Collect, Evaluate, and Report their metrics, “Both **Product Integrity** and **Process Performance Metrics**”
- In addition the MSFC-HDBK-3173 provides additional information on Technical Performance Measurements (TPMs). Future update will include additional guidance to Project / Program Managers (PMs), Lead Systems Engineer (LSE), Lead Subsystems Engineer (LSSE).
- Recommendation #1 completed



Recommendation #2 - Assign the action to collect and report product conformity and process performance metrics to an organization at selected management review meetings.

- Per our MPG and a Center Director Memo, ED, FD, MP, SD and TD, Program/Project statuses are reported to Center Management using a hierarchical systematic approach.
 - Top-level “Stop Light” data is provided to 9th floor
 - Monthly/Quarterly Statuses are presented to Directorate Management (Center Director, Program Manager, and HQ often support the Quarterly Meetings)



MQC Action Items Status

MQC-0047 (cont) - Axel Roth

- Additional means are used by the Center/Agency to review this type information.
 - SMO, S&MA, ED review of Program/Project Plans
 - PMC/GPMC meetings
 - NARS/IAR/Red Team Reviews
 - MSFC Quality Council by way of our Management Rep.
 - Weekly notes
 - Customer Feedback
 - Corrective Action System
- Recommendation #2 completed



MQC Action Items Status
MQC-0047 (cont) - Axel Roth

Recommendation #3 - Determine where/how metrics will be reported to upper management (i.e., MQC).

- This is addressed in recommendation #2 on previous charts. The “Where” is Weekly, Monthly, Quarterly, Annual Meetings/Reviews. The “How” is Program/Project Plans, EVM systems, Stop Light package, Project Health Status Packages, weekly notes....
- Recommendation #3 completed
- Recommend closure of this action item

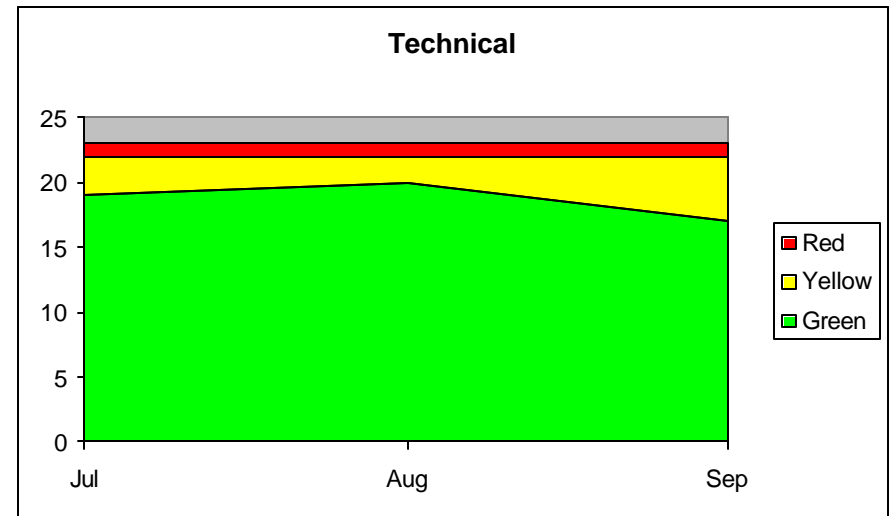
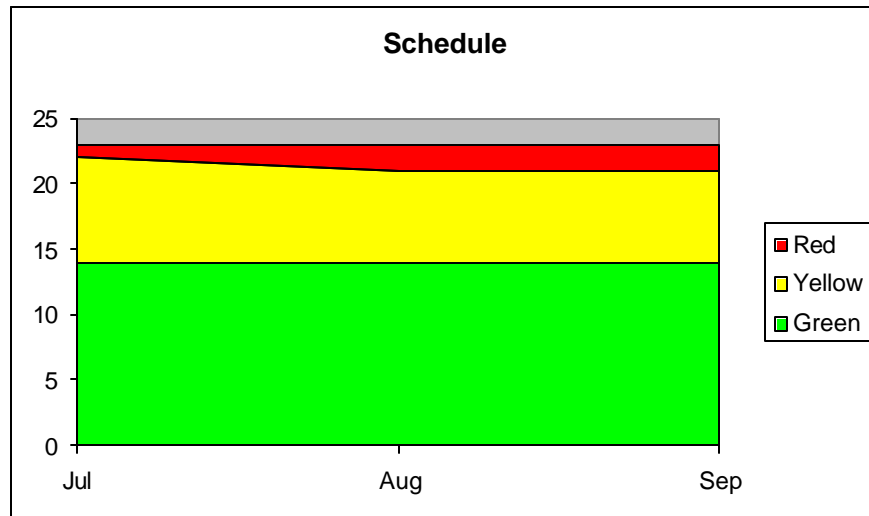
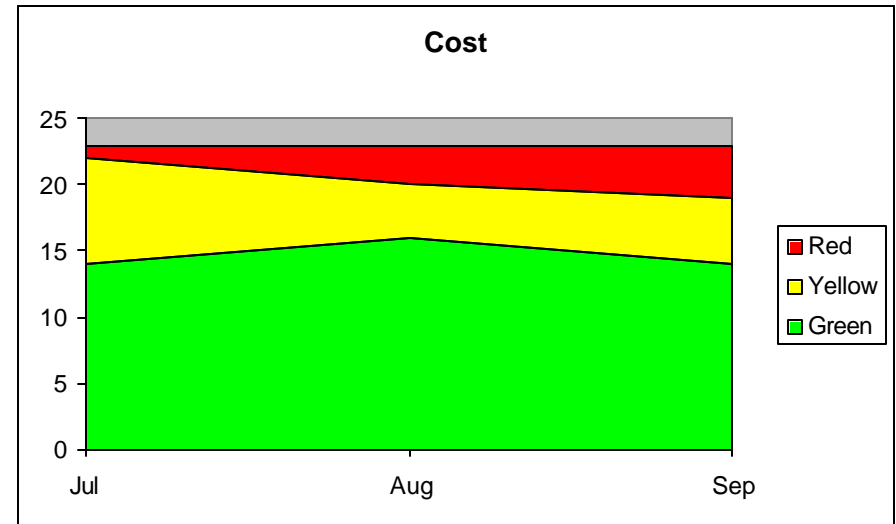
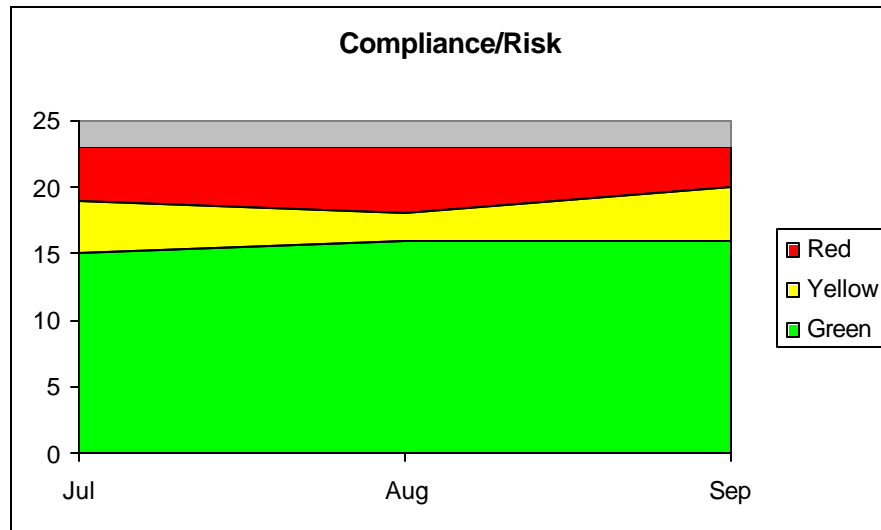


Results of Fourth Quarter FY01 for Process Performance and Product Conformity

Axel Roth



4th Quarter FY01 Executive Summaries



Issues/Common Themes:

Budget reductions
 Budget overruns caused by delays (inputs/hardware & technical problems/issues)
 Personnel workload



Process Performance and Product Conformity (cont) – Axel Roth

- 180 Directives
- 6 Active Waivers against 3 directives
 - MPG 5000.1 - Purchasing (OPR: PS) - 2 Waivers
 - MWI 7120.6 - Program/Project Risk Management (OPR: QS) - 3 Waivers
 - MPG 8040.1 - Configuration Management (OPR: ED) - 1 Waiver
- It appears that 2-3 of the waivers against MWI 7120.6 are candidates for cancellation (in work).
- The documented system appears to be adequate. (It is assumed that personnel seek deviations/waivers where necessary.)



MQC-0048 – *Review CI website and make changes to address how MSFC employees can create change and give employees a mechanism and the ability to initiate change through the continual improvement process.*

- Added Employee Empowerment Statement to CI Web Site
- Added EDTeC Link to CI Web Site
- Added Marshall Institute Link to CI Web Site
- Highlighted “IDEAS” Link on CI Web Site
- <http://contimp.msfc.nasa.gov>
- Recommend closure of this action item



Internal Quality Audit Report

Warren Woods



Internal Quality Audit Report – Warren Woods

- Six internal audits since the last MQC
- 2001 internal audits are full scope and ISO 9001:2000
- Top Five Findings
 - Document and Data Control – References not kept up-to-date or obsolete
 - Quality Records – Lack of Draft Records Plans, missing or unidentified records
 - Purchasing – Not maintaining records as required
 - Metrology – Maintenance of the database
 - Training – lack of records, undocumented training requirement



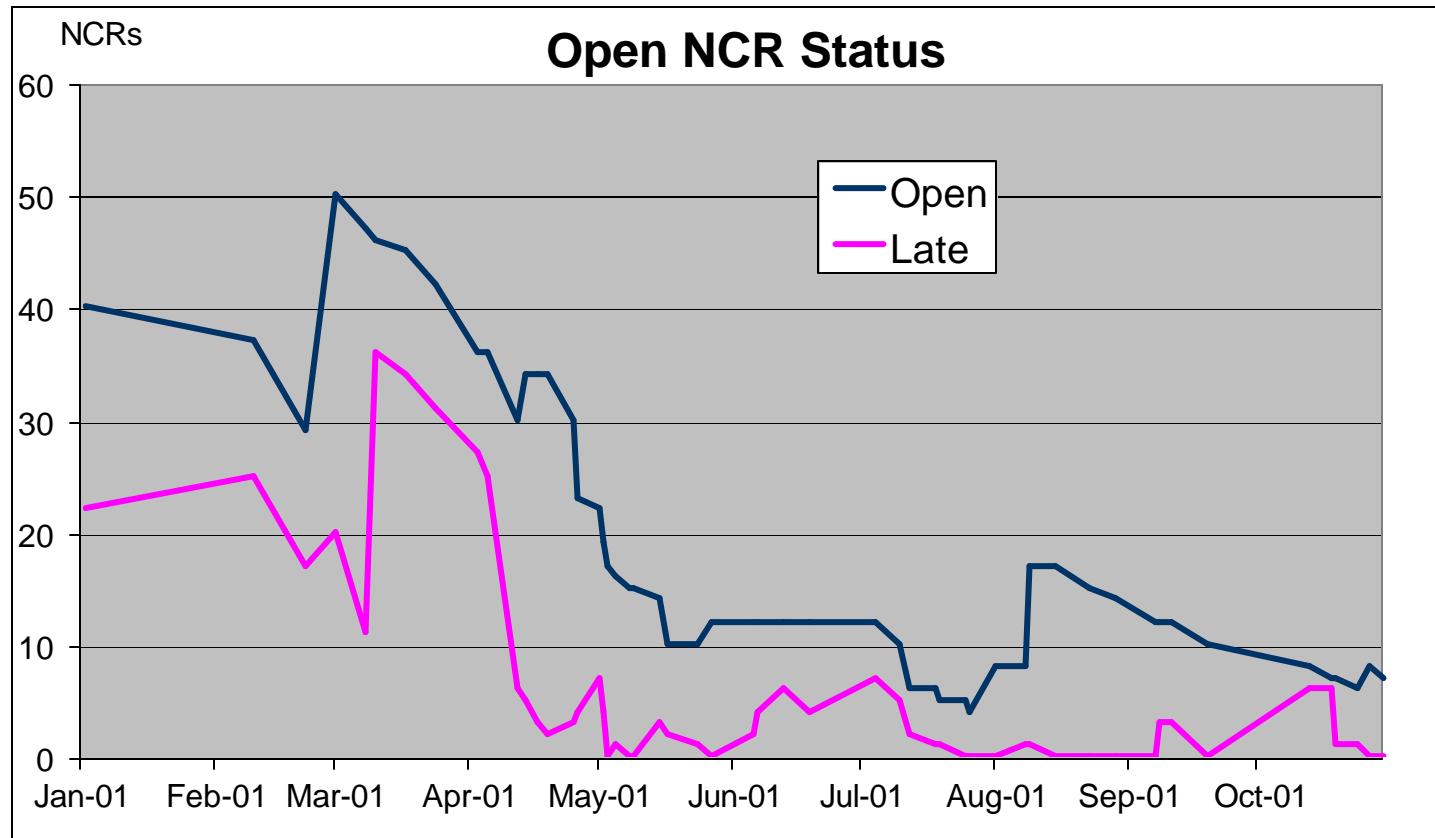
Internal Quality Audit Report – Warren Woods

- Completed Centerwide 9K:2K transition audit in October
 - Special emphasis on continual improvement, customer relations, goals and objectives, internal communications...
 - Noted issues
 - Lack of awareness of goals and objectives
 - Everyone is doing continual improvement
 - Internal communication mechanisms are in place



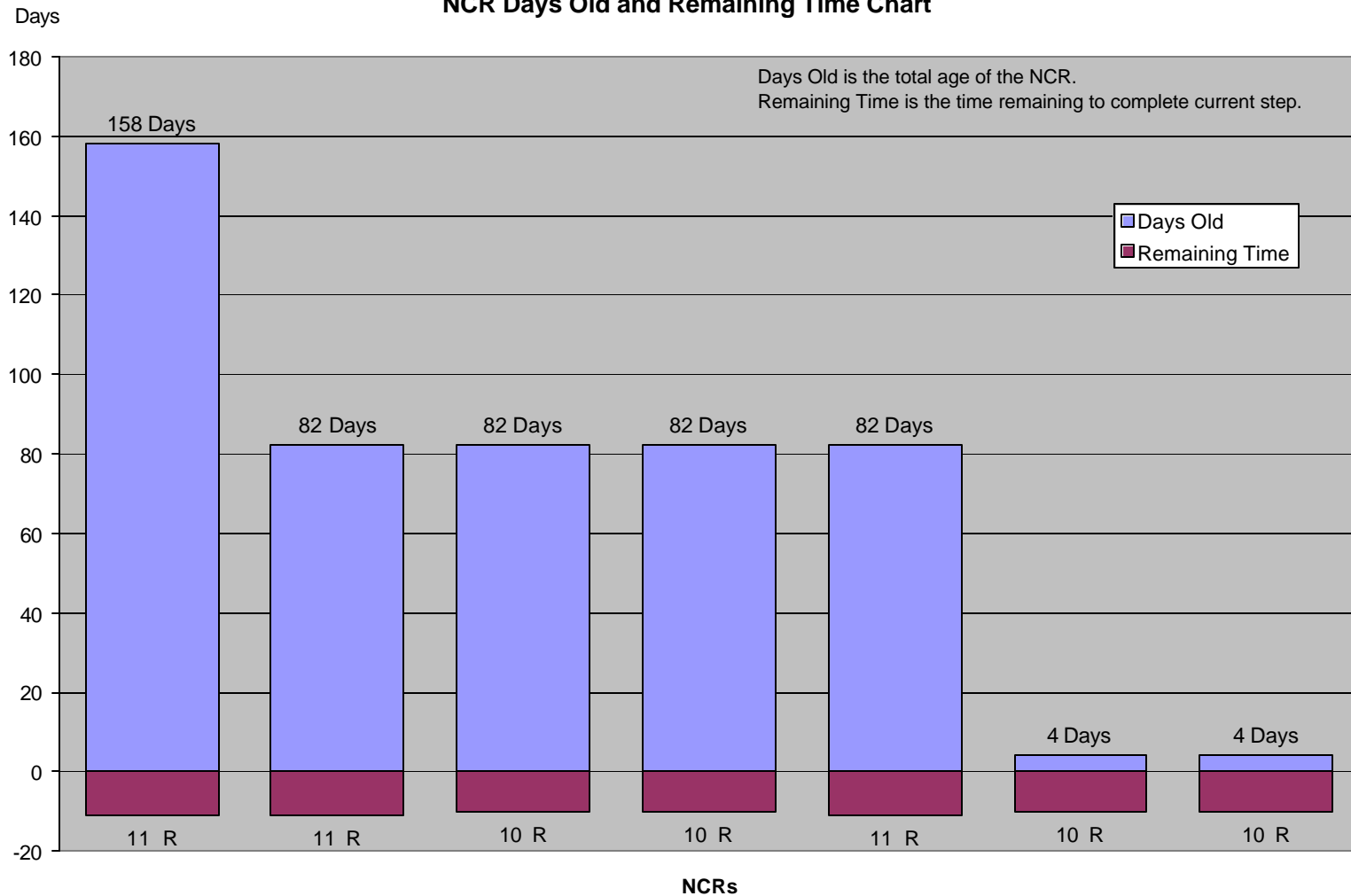
Internal Quality Audit Report – Warren Woods

- Status of Open NCRs (See next chart)
 - 7 Open Non-Conformance Reports (NCRs)
 - None are late as of 11/5/01
- Schedule
 - Schedule complete for 2001 with the audit of AD in December
 - 2002 Draft Internal Audit Schedule is out for review





NCR Days Old and Remaining Time Chart





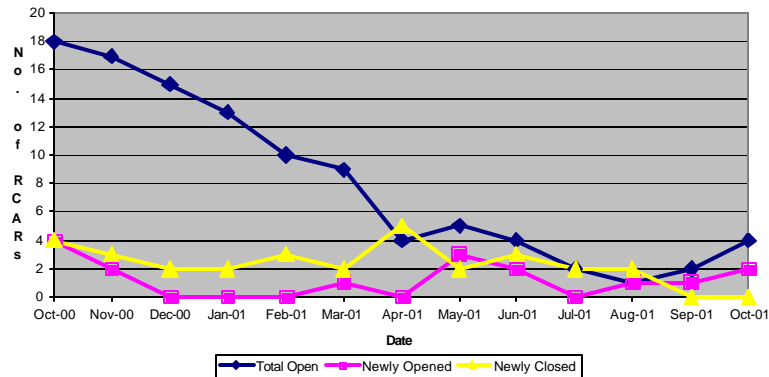
Corrective & Preventive Action Program

Jim Thomason



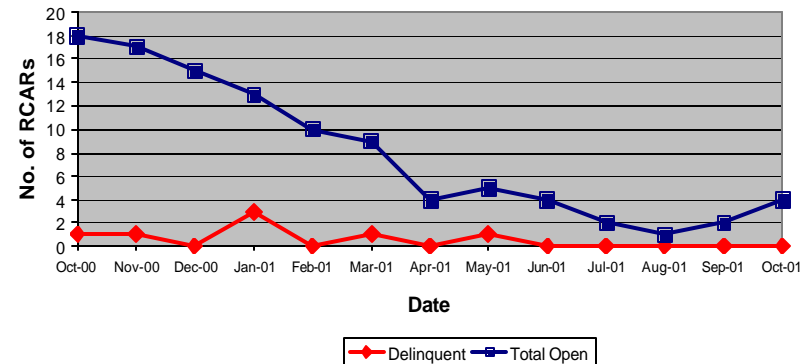
Corrective Action Program – Jim Thomason

RCARs



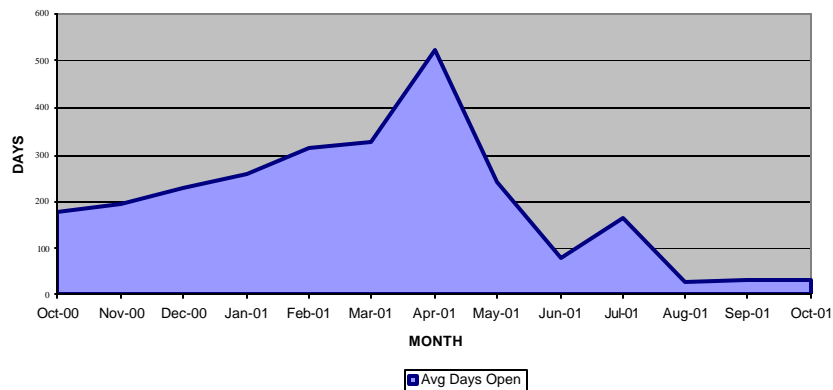
Total Open RCARs:	18	17	15	13	10	9	4	5	4	2	1	2	4
Newly Opened RCARs:	4	2	0	0	0	1	0	3	2	0	1	1	2
Newly Closed RCARs:	4	3	2	2	3	2	5	2	3	2	2	0	0

Open Versus Delinquent RCARs



Delinquent Responses:	1	1	0	3	0	1	0	1	0	0	0	0	0
Total Open RCARs:	18	17	15	13	10	9	4	5	4	2	1	2	4

AVERAGE DAYS RCARs OPEN AT END OF MONTH



Average Days Open:	177	194	227	257	316	326	524	240	78	164	28	31	35
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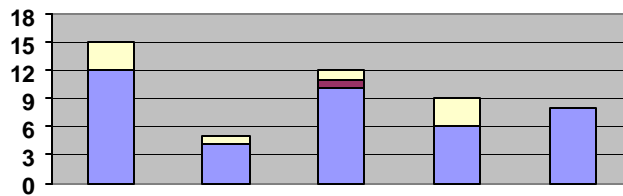
	TOTAL Since 10/97	Made to RCARs	TOTAL Since 6/1/01	Made to RCARs
DR	276	45	49	5
QSDN	105	72	3	1
CustFdbk	42	0	9	0
TOTAL	423	117	61	6



Corrective/Preventive Action Notifications (CANs) – NONE Issued

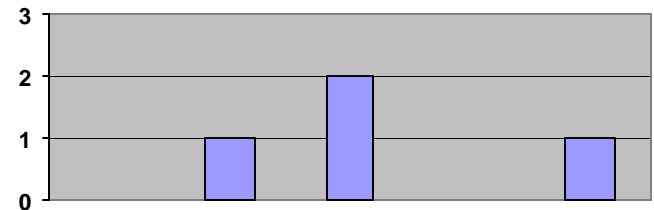
GIDEP and NASA ALERTs and Parts Advisories

ALERTs Distributed By MSFC



	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01
Other NASA	3	1	1	3	0
MSFC-Initiated	0	0	1	0	0
GIDEP-Initiated	12	4	10	6	8

MSFC-Impacted ALERT Responses
(i.e., involved component used by MSFC organization or project)



	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01
Impacted ALERT Responses	0	1	2	0	1

MSFC-Initiated ALERTs

NA-MSFC-01-03: Transistor, P-MosFets Solder Splattered on Exterior Case (Fairchild Semiconductor)

OTHER MAJOR PREVENTIVE ACTION ACTIVITIES

1. Continuous Risk Management activities per MWI 7120.6

MSFC-Impacted ALERTs

N9-A-01-01 Plastic Media Blasting, USA-SRB

F3-P-01-02 Ceramic Capacitor Switch
Mode Power Supply, PFM

IF4-P-01-01 Explosive material, USA-SRB

NA-MSFC-01-03: Transistor, P-MosFets
Solder Splattered on Exterior Case, ED16



Customer Satisfaction & Continual Improvement

Michael McLean



Customer Satisfaction – Michael McLean

- All Customer Satisfaction Points-of-Contact Identified
- All Customer Lists provided
- Information loaded into Customer Satisfaction (CS) web site
- Section added to web site for Summary CS Data
- <http://msfcsma3.msfc.nasa.gov/dbwebs/apps/qualcomm/>
- Working with the submitters of Implementation Plan Metrics to include CS elements



Continual Improvement –Michael McLean

- Added Link from Continual Improvement (CI) web site to Balanced Score Card web site
- Added Employee Empowerment Statement
- Added Links to EDTeC and Marshall Institute
- Highlighted “IDEAS” Link on CI web site
- <http://contimp.msfc.nasa.gov>
- Working with the submitters of Implementation Plan Metrics to include CI elements



Continual Improvement Success Story

Project Documentation System (PDS)

Gary McGriff/ED

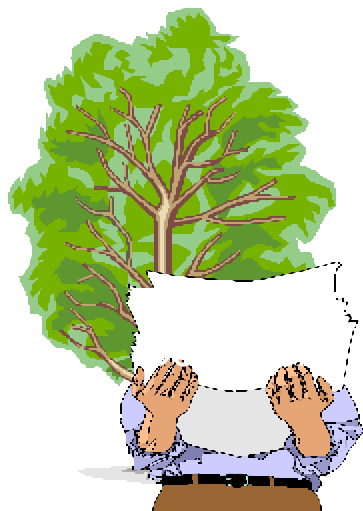
What is it...?

- PDS is an ISO-Compliant Data Management Tool which better enables Program/Project managers to control their project documentation.
- PDS is a web-based system which allows approved users from anywhere in the world to submit, review, disposition and approve documentation in a real-time environment.
- PDS allows for faster review and approval turn around times, therefore eliminating costly paper reviews.

What is it...? (cont'd)

- PDS eliminates the need for “PAPER.” All documents are uploaded in any electronic format where they are reviewed, dispositioned, approved, and archived as electronic documents.
- PDS archives all reviews, comments, Change Control Board activities and document approval information in retrievable electronic format.
- PDS contains Enhancement/Discrepancy System for customer satisfaction and continual improvement of the system.
- PDS adopted by SLI to review, comment, approve and archive program/project documentation across the Agency.

The Paper Process



X



X

1500

**Documents
per YEAR**

Over 1 MILLION Pages of Paper

1 FTE of Reproduction Time

Approximately 500 Personal Document Storage Areas

Mail System Burden

Manual Workload Reporting

Manual Historical Queries

Non-Standard Document Archiving

APPROVAL AUTHORITY FINAL RECOMMENDATION

Document Title: [MRPO Program Budget](#)

Document No.: MRPO-BDGT-002

Revision: Baseline

Approving Official: Cindy Legowik

APPROVAL AUTHORITY RECOMMENDATION

☐ APPROVE

☐ DISAPPROVE

☐ CANCEL

Submit

Reset Values

[Search Again](#)

UPLOAD

REVIEW

COMMENT



Success Story for Collaborative Effort with Organizations Outside of MSFC

Development of an Environmentally-Friendly Epoxy Stripping Process

Alan Shapiro/SD72



Collaborative Efforts with Organizations Outside of MSFC – Alan Shapiro/SD72

- MSFC, i.e. SOMTC, supports development of manufacturing technology for Constellation-X, managed by GSFC.
- During 2000-2001, a MSFC/Contractor Team implemented a new, more effective and environmentally friendly process for removing epoxy from valuable replication hardware.
 - MSFC personnel: A. Shapiro, T. Thompson, D. Goodman
 - Contractors: C. Speegle (Raytheon), S. Marona (ASRI)
- This process was recognized at MSFC's last Earth Day ceremony.
 - Avoided use of strippers containing methylene chloride (ozone depletor and hazardous to personnel)

Collaborative Efforts with Organizations Outside of MSFC – Alan Shapiro/SD72

- Constellation-X is the next generation of x-ray astronomy.
 - Optics w/ $\sim 100\times$ collecting area of Chandra and XMM
 - Requires 100's of lightweight, nested grazing incidence optics in a nominal volume. (Chandra had 4 pairs.)
 - Prevailing manufacturing technology is epoxy replication of thin shells/segments from mandrels



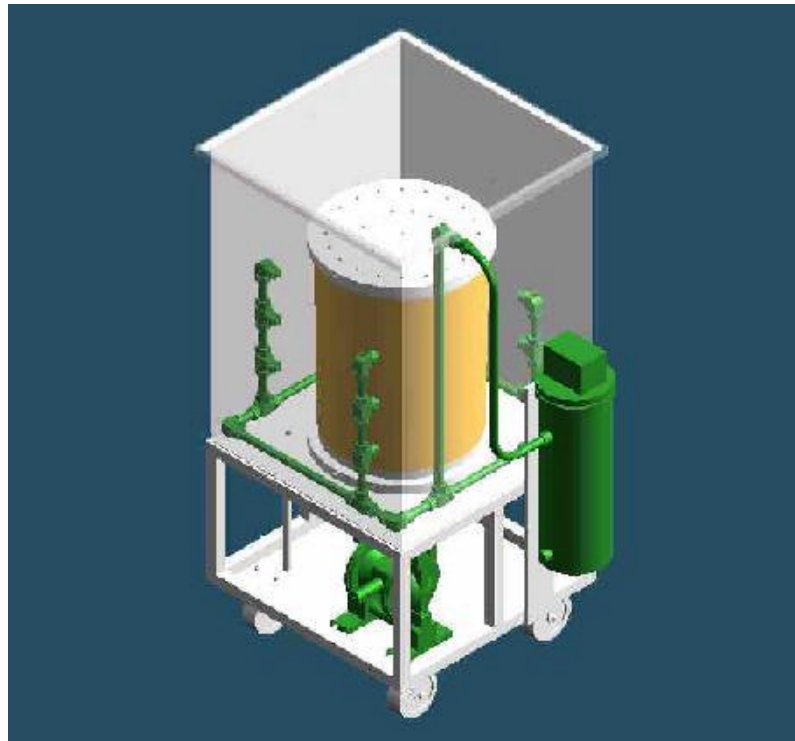


Collaborative Efforts with Organizations Outside of MSFC – Alan Shapiro/SD72

- During replication, epoxy residue sometimes adheres directly to the reusable mandrel surfaces and must be removed without surface degradation.
- Typical epoxy strippers contain methylene chloride (ozone depletor) and additives such as formic acid (attacks metal).
- Our team identified potential alternatives:
 - w/ help from AD10 (MSFC environmental group)
 - extensive literature search
 - discussions w/ aerospace & epoxy users nationwide
- The team performed extensive laboratory tests.
- The team selected and implemented a superior process utilizing heated Dynasolve 185.
 - n-methyl-2-pyrrolidone + ethylene glycol phenyl ether

Collaborative Efforts with Organizations Outside of MSFC – Alan Shapiro/SD72

- After several replications done at MSFC during 2000/2001 (GSFC/MSFC/SAO), our team designed a custom heated stripping tank and successfully stripped epoxy residue from from the Zeiss 50cm mandrel.





Continual Learning

Sandra Dickerson/CD20



Continual Learning – Sandra Dickerson

- **Objective for FY2002:** Increase employee and organizational development opportunities by $\geq 10\%$ of FY2001 baseline.
- **Metrics:** Baseline established for FY2001 for the following Continuous Learning Programs:
 - AdminSTAR
 - Awards
 - Contracting Interns
 - Cooperative Education
 - Electronic Meeting System
 - Engineer Development
 - Fellowship Program
 - Full-Time Students
 - Learning Channels
 - Mentoring
 - New Employee Orientation
 - Organizational Development
 - Part-Time Studies
 - Professional Development
 - Professional Interns
 - Special Events Coordination
 - Technology Assisted Learning
 - Online Training and OD survey
 - Employee Development Technology Center
 - Various Programs including: ISO 9000, IT Security, Cultural Diversity, Safety/VPP, Leadership, & Program Management/Leadership



Accomplishments

- Implementation of the Marshall Institute
- Increased focus on Organizational Development
- Increased focus on Project Management and Systems Engineering Skills
- Continued expansion of technology assisted training
- Strengthened Cooperative Education & New Employee programs

Current Initiatives/Goals

- Implement comprehensive metrics
- Implement new leadership development series



Status of NQA August 2001 Surveillance Audit Findings

Mary DeMurray



Status of NQA August 2001 Surveillance Audit Findings

Mary DeMurray

- NQA Surveillance Audit Findings

Observations	0
Minor Nonconformances	1
Carry-Overs	0
Total Findings	<hr/> 1

- Corrective action has been reported completed and follow-up has been scheduled.



NQA Surveillance Audit Finding – August 2001

Mary DeMurray

MSG Work Order Traveler W-04559/1 for customer X-38 Deorbit Propulsion Stage for inspection support was missing part ID. Part ID number was not traceable by information entered on the traveler.

- Corrective Action taken: All required paperwork has been verified to be with the hardware. Manufacturing Services Group personnel have been trained on documentation required to initiate work as defined in ED37-09-003 and MWI 1280.1.



Status of NQA ISO 9001:2000 Pre-Assessment Audit Findings

Mary DeMurray



Status of NQA ISO 9001:2000 Pre-Assessment Audit Findings

Mary DeMurray

- NQA Pre-Assessment Audit Findings

Observations	4
Minor Nonconformances	0
Major Nonconformances	0
Total Findings	<hr/> 4

- Two corrective actions have been completed.
- No corrective action necessary for one observation.
- One corrective action still in progress.



NQA ISO 9001:2000 Pre-Assessment Audit Findings – August 2001

Mary DeMurray

The scope of the QMS as defined in MPD 1280.1 is more a description of the extent of applicability rather than a description of the activities. The scope should answer the question of what we do as an organization.

- Corrective Action taken: The scope of the QMS has been clarified in MPD 1280.1, “Marshall Management Manual,” revision H, as follows: “All products and services provided by the Marshall Space Flight Center. MSFC supports the NASA Agency infrastructure and is a major contributor to all its scientific and technical enterprises.”



NQA ISO 9001:2000 Pre-Assessment Audit Findings – August 2001

Mary DeMurray

Although the quality policy is appropriate to the organization and provides a framework for establishing and reviewing quality objectives it lacks a clear commitment to continually improve the effectiveness of the QMS.

- Corrective Action taken: The quality policy has been revised in MPD 1280.1, “Marshall Management Manual,” revision H as follows: “MSFC policy is to provide quality products and services to our customers through the Marshall values: people, customers, excellence, teamwork and innovation.”



Objective evidence of process measures lacks evidence of maturity.

- No corrective action required. Specific process measures observed during the pre-assessment audit were all new. Process measures will continue to mature.



NQA ISO 9001:2000 Pre-Assessment Audit Findings – August 2001

Mary DeMurray

The MSFC Implementation Plan identifies a broad landscape of objectives that span the organization, but it is unclear how deep these objectives are employed throughout the organization to the extent that individuals would understand their contribution to established objectives.

- Corrective Action taken: Progress continues to be made. The Center-wide internal audit conducted October 15-19 has heightened the awareness of objectives and the need for individuals to understand the objectives that they directly support.

Closing Remarks

Axel Roth



- Registration Audit November 28th-29th
 - Full Scope
 - ISO 9001:2000
- Next Surveillance Audit to ISO 9001:2000 in May 2002



Registration Audit – November 28-29, 2001 - Axel Roth

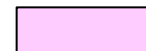
- All MSFC activities are subject to audit
- Emphasis will be on activities providing products/services to external customers
- Exercises and Resources for Audit Preparations has been added to the [ISO web site](#) . We highly recommend everyone visit this resource.



ISO 9001:2000 Clauses Selected for Registration Audit – Axel Roth

4.2.1/4.2.2	Quality Manual
4.2.3	Document Control
4.2.4	Quality Records
4.1/5.1/5.2/5.3/5.4.2/5.5	Management Activities
5.4.1	Quality Objectives
5.6	Management Review
6.1/6.2	Resources & Competence
6.3/6.4	Infrastructure & Work Environment
7.2	Customer Related Processes & Communication
7.3	Design & Development

7.4	Purchasing
7.5.4	Customer Property
8.2.1	Customer Satisfaction
8.2.2	Internal Audits
8.2.3	Measurement & Monitoring of Processes
8.3	Nonconforming Processes/Products
8.4	Analysis of Data
8.5.1	Continual Improvement
8.5.2/ 8.5.3	Corrective/Preventive Action



Signifies clauses that will be reviewed each visit



Changes That Could Affect the MMS – Axel Roth
Issues & Recommendations - Axel Roth

- Changes That Could Affect the MMS
 - ISO 9001:2000 revision that has been implemented
 - There are no other significant changes at this time
- Issues & Recommendations
 - Organizations need to continue educating individuals on their role(s) in supporting quality objectives
 - Recommend everyone visit the ISO web site



Overall Status of the Marshall Management System – Axel Roth

- Overall, the suitability, effectiveness and adequacy of the Marshall Management System (MMS) appear to be acceptable
 - Internal and external audits indicate no major problems with the MMS
 - Tremendous amount of progress by the Organizations towards the up-coming registration to full scope and the ISO 9001:2000 revision

Other

Empowerment --- Employee and Management Interaction as related to Continual Improvement

Empowerment is defined as the investment or enabling with authority.. This term is not new; it has been around for a few centuries. However, as corporations are being tasked to do more with less, the empowerment of employees is even more critical.

Empowerment is marked by management's encouragement of employee participation:

- to improve organizational efficiency and effectiveness,
- to focus on the customer, emphasizing the importance of teamwork,
- to promote organizational learning or continued education,
- to share success stories and lessons learned throughout the organization, and
- to demonstrate strong interpersonal skills.

MSFC promotes the above initiatives through the Marshall Values – People, Customers, Excellence, Teamwork, and Innovation – as demonstrated by:

- document and design reviews,
- newly implemented customer satisfaction process that focuses on data gathering for the purpose of process improvement,
- training opportunities provided by the Marshall Institute and EDTec; Training and Organizational Development Survey
- Continual Improvement web site (<http://contimp.msfc.nasa.gov>) , project lessons learned sites and NASA Lessons Learned web site (<http://llis.nasa.gov/>)

“Zapped! The Lightning of Empowerment” by William C. Byahm provides the following key steps to empowering (“zapping”) employees.

Management role/tasks in empowering:

Management steps to “zapping” employees include the following:

1. Maintain or enhance employee self-esteem
2. Listen and respond with empathy
3. Share thoughts, feelings and rationale
4. Ask for help and encourage involvement

The following “Zapps” people:

Responsibility	Trust
Meaningful work	Praise
Variety in assignments	Recognition of contributions
Measurable outputs	Direction
Challenge	Support/Coaching/Feedback
Authority to make/participation in some decisions	

Employee role/tasks in empowering:

When you have been empowered, you believe that...

- Your job belongs to you
- You are responsible
- Your job counts for something
- You know where you stand
- You have some say in how things are done
- Your job is part of who you are
- You have some control over your work

Find opportunities to improve quality and productivity (and work to realize these opportunities)

Process Improvement: Enhancing Your Organization's Effectiveness by Eileen M. Flanigan and Jon Scott, 1995 by Crisp Publications

Use the customer as the starting point (a customer is anyone whose satisfaction depends upon your process.)

- Require participation
- Take a process view
- Depend upon measurements
- Require some training and preparation
- Drive change to help create a better product or service
- Work as well in a service business in manufacturing

Leaders/Contributors are More Concerned About	Bodies Taking up Space Are More Concerned About:
Doing what is right	Doing what is required
Vision for the future	What we did a year ago
Giving	Getting
Customers	Themselves
Accepting responsibility	Avoiding Responsibility
Encouraging change	Fighting all change
Caring	Apathy
Process	Fire fighting
Is it my best?	Is it good enough?
How can I improve?	It was good enough before
Attitude of Ownership	Just a hired hand
Love it, change it or leave	Stay and complain

Measure the pulse points:

- Measure what is important to your customer
- Measure logical outcomes of your process
- Measure what you would like to see improved
- Measure things using common terminology

Management: Get the employees involved. Get the employees and managers together. Give them responsibility and accountability. Give them the opportunity to use their head and heart in making the business successful. If you feel that they are not ready yet, then train and educate them. Give them overall goals or, better yet, let them set their own; then get out of their way. Whether at the lowest department level or the top executive level, the prescription is the same.

Employee: Wherever you are in your company, if you want to be a part of a growing, thriving organization then you must make it a priority to increase your customers' value on a continuous basis. The way you do that is to get yourself, and as many people in your company as you can, the basic skills necessary to make continuous change for the better a way life.

"Zapped! The Lightning of Empowerment" by William C. Byahm and ***Process Improvement: Enhancing Your Organization's Effectiveness*** by Eileen M. Flanigan and Jon Scott are available at the ED Tec Center.